

follows a zigzag path between the fingers of the first and second sets. As illustrated in FIG. 4, terminal 4 of the outer array 22 is connected to an outer arcuate exposed trace 31 interconnecting a first set of radial exposed trace fingers, such as fingers 32 and 33. Similarly, terminal 6 is connected in an inner arcuate exposure trace 34 interconnecting a second set of radial exposed trace fingers, such as FIGS. 35 and 36. Terminal 6 is connected to a continuous exposed trace 37 which follows a zig-zag path between the first and second sets of radial fingers.

It is apparent from FIGS. 3A, 3B, and 4 that suppression of the rubber key member 14 creates a short circuit between elements of the inner array 21, thereby connecting terminals 1, 2, and 3, and simultaneously creates a short circuit between the elements of the outer array 22, thereby connecting the terminals 4, 5, and 6.

The exposed traces may be formed from any of a number of materials known to those skilled in the art. Gold plated copper, silver plated copper or conductive carbon paste are likely materials, for example. Selection ordinarily will depend upon the particular application.

Because of the circular configuration of the shorting pucks and the arrays 21 and 22, the shape of the key 14 can be circular or square, rather than an elongated rectangle as in the prior art. Thus, the chance of collapsing only one end of the key is significantly reduced. However, even if one side of the key is accidentally depressed such that only half of the puck makes contact with the printed circuit card, it is highly probable that both switches will be activated properly.

It should be emphasized that although only two sets of switches have been described in the foregoing material, more switching functions can be performed by increasing the number of concentric arrays in the printed circuit card and the number of concentric conductive rings in the composite shorting puck assembly.

While the invention has been described in its preferred embodiments, it is to be understood that the words which have been used are words of description rather than of limitation and that changes within the purview of the appended claims may be made without departure from the true scope and spirit of the invention in its broader aspects.

I claim:

1. In a keypad switch of the type including a key having shorting pucks on its underside and supported above exposed trace patterns on a printed circuit card by a flexible membrane whereby pressure on the key collapses the membrane and permits the shorting pucks to contact with the exposed trace patterns thereby clos-

ing the switch, the improvement wherein said shorting pucks include a central circuit puck electrically isolated from an annular puck thereabout, said annular puck being co-planar and concentric with said circular puck, and wherein said exposed trace patterns are formed in a circular region and an annular region co-planar and concentric with said circular region, exposed trace patterns in said circular region being electrically isolated from trace patterns in said annular region, said circular region and said annular region being correspondingly aligned with said circular puck and said annular puck.

2. The switch of claim 1 wherein said exposed trace patterns include a plurality of electrically isolated exposed trace elements each having a switch terminal.

3. The switch of claim 2 wherein said exposed trace pattern in said circular region includes two trace elements formed along a circumferential border of said circular region, said two exposed trace elements each including a plurality of exposed trace fingers being further arranged so that said exposed trace fingers coupled to one of said two exposed trace elements are interposed between said exposed trace fingers coupled to the other of said two exposed trace elements, a third exposed trace element comprising electrically connected segments interposed between said exposed trace fingers of said two exposed trace elements and extending continuously in said circular region in a zigzag fashion.

4. The switch of claim 3 wherein said exposed trace fingers of said two exposed trace elements and said segments of said third exposed trace element are arranged to be a parallel relationship.

5. The switch of claim 2 wherein said plurality of exposed trace elements of said annular region includes a first trace element formed along an inner circumferential border of said annular region, a second exposed trace element formed along an outer circumferential border of said annular region, and a third exposed trace element extending in a continuous, undulating manner in said annular region between said first and second trace elements, said first and second trace elements further including exposed trace fingers alternately positioned in an interleaved manner in said annular region and said third trace element having electrically connected segments interposed between said exposed trace fingers of said first and second trace elements.

6. The switch of claim 5 wherein said exposed trace fingers of said first and second exposed trace elements and said segments of said third exposed trace element extend along radials of said annular region.

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